

PROSTHOGONIMUS ROBDOLLFUSI N. SP.,
(TREMATODA : PLAGIORCHIIDAE)
FROM THE BURSA FABRICII
OF THE SNIPE, GALLINAGO GALLINAGO.

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The genus *Prosthogonimus* was created by LÜHE in 1899, with the type species *P. ovatus* (Rudolphi, 1803) Lühe, 1899.

The first record of the genus in India appears to be that of GIDEON (1929). He had reported on the occurrence of *Prymnoprion* sp., from the rectum of *Ibis megalocephala*, which name, according to Braun, 1902 is a synonym of *Prosthogonimus*. As no description was published by that worker, SRIVASTAVA (1938) placed it as a species under inquiry. A new species, under the name *P. indicus*, was described in detail by SRIVASTAVA (1938), based on three specimens recovered from the oviduct of two fowls, and the pathogenicity of *Prosthogonimus* in the fowl also discussed in the paper. It was differentiated from all known species of the genus on various morphological criteria and regarded as new.

LAL (1939), in his monograph on avian trematodes, reported the occurrence, for the first time in India, of *P. cuneatus* (Rud. 1809) Braun, 1901 having obtained a single specimen from the bursa Fabricii of the Mynah, *Acridotheres tristis*. Following SINHA (1932), he dealt with the genus under the family *Cephalogonimidae* Nicoll, 1914 instead of under the *Plagiorchiidae* subscribing fully to the views of the same author.

A single specimen of *Prosthogonimus* from the alimentary canal of the House Sparrow, *Passer domesticus*, was described by CHAUHAN (1940) and considered to be a new species, *P. macroacetabulus*. He provided a key to all the species of *Prosthogonimus* including his own, suppressing the three species *P. skrjabini*, *P. karausiaki*, and *P. horiuchii*. The first two were regarded as conspecific with *P. anatinus*, and the third with *P. putschkowskii*.

BHALERAO (1941 a) published a preliminary note on the occurrence of the « Bat fluke *Prosthogonimus ovimagnosum* » in the small intestine of a dog in Calcutta. This, apparently, was a mistake in nomenclature because in the detailed account, he (1941 b) had corrected the generic name to read as *Prosthodendrium ovimagnosum* (Bhalerao, 1926).

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BHALERAO and GIDEON (1941 a & b) encountered *P. putschkowskii* Skrjabin, 1913 in the intestine and rectum of the Pond Heron, *Ardeola grayi*. They cited the review of WITENBERG and ECKMANN (1939), and applying the key provided by them found the species from *Ibis megaloccephala* reported by GIDEON in 1929 and the one from *Ardeola grayi*, as well as *P. indicus* Srivastava (1938), all referable to *P. putschkowskii*.

DOLLFUS (1948) published a treatise on the Prosthogoniminae reviewing and illustrating all the species known so far. He catalogued them under 130 bird hosts, and also indicated their localities and recorders. The observations of BHALERAO and GIDEON (1941 a, b) quoted above are not to be found in this work of DOLLFUS (1948).

No further reports are available till the publication by JAISWAL (1957) of an account of the trematode parasites of fishes and birds of the Hyderabad State. Five new species of the genus *Prosthogonimus* were described under the *Plagiorchiiidae*, from the bursa Fabricii of six different birds :

1. *P. dollfusi* from *Athene brama brama* (spotted owl) and *Corvus splendens* (crow) ;
2. *P. ketupi* from *Ketupa zeylonensis zeylonensis* (Southern fish owl) ;
3. *P. mesolecithus* from *Athene brama indica* (Northern spotted owlet) ;
4. *P. hyderabadensis* from *Bubulcus ibis* (cattle egret) ;
5. *P. singhi* from *Ardeola grayi* (Pond Heron).

He added a detailed key to the identification of 31 species of the genus, modified and enlarged from the keys of CHAUDAN (1940), and DOLLFUS (1948).

In the same year, a review of the systematics of the genus *Prosthogonimus* by PANIN (1957) mentioned that speciation « in the genus should depend on characters like the development of the uterus, relation of the ovary to acetabulum and of the uterus to the intestine, posterior limit of the vitellaria, and the position of the testes and acetabulum ». He considered *P. orientalis* synonymous with *P. anatinus* ; and *P. putschkowskii*, *P. macroacetabulus* and *P. indicus* with *P. cuneatus*.

YAMAGUTI (1958) revived the family *Prosthogonimidae* Nicoll, 1924 and listed 32 species with their hosts. Of these, three were unnamed larval forms. The four Indian species included were *P. cuneatus*, *P. indicus*, *P. macroacetabulus* and *P. putschkowskii*. It may be pointed out that *P. indicus* was retained as an independent species although BHALERAO and GIDEON (1941 a, b) had merged it with *P. putschkowskii*, and that the five new species of JAISWAL (1957) were not included in the list.

Quite recently, NATH (1962) has described *P. putschkowskii* from the oviduct of fowl in India, and discussed the status of 10 species of the genus in India. He has recognized only two valid species : *P. cuneatus* (inclusive of *P. ketupi* and *P. hyderabadensis*), and *P. putschkowskii* (inclusive of *P. dollfusi*, *P. indicus*, *P. macroacetabulus* and *P. singhi*). The remaining two species, *P. anatinus* and *P. mesolecithus*, are relegated to an uncertain status.

In the present study, a species of *Prosthogonimus* from the Snipe, *Gallinago gallinago*, in Madras, is reported upon.

Prosthogonimus Robdollfusi n. sp.

Three specimens of this fluke were recovered from the bursa Fabricii of the Snipe, *Gallinago gallinago*, and examined after permanent mounting.

Description : Small size, flattened and pyriform. Anterior region narrow and pointed, and posterior region broad. Irregularly indented outline. Cuticle with spines, numerous and closely set in the anterior and middle region and sparse in the posterior region (fig. 1)

Oral sucker oval and muscular, with terminal mouth. Acetabulum circular, disc-shaped, strongly muscular, and more than twice the size of the oral sucker, situated approximately one third of the body length from

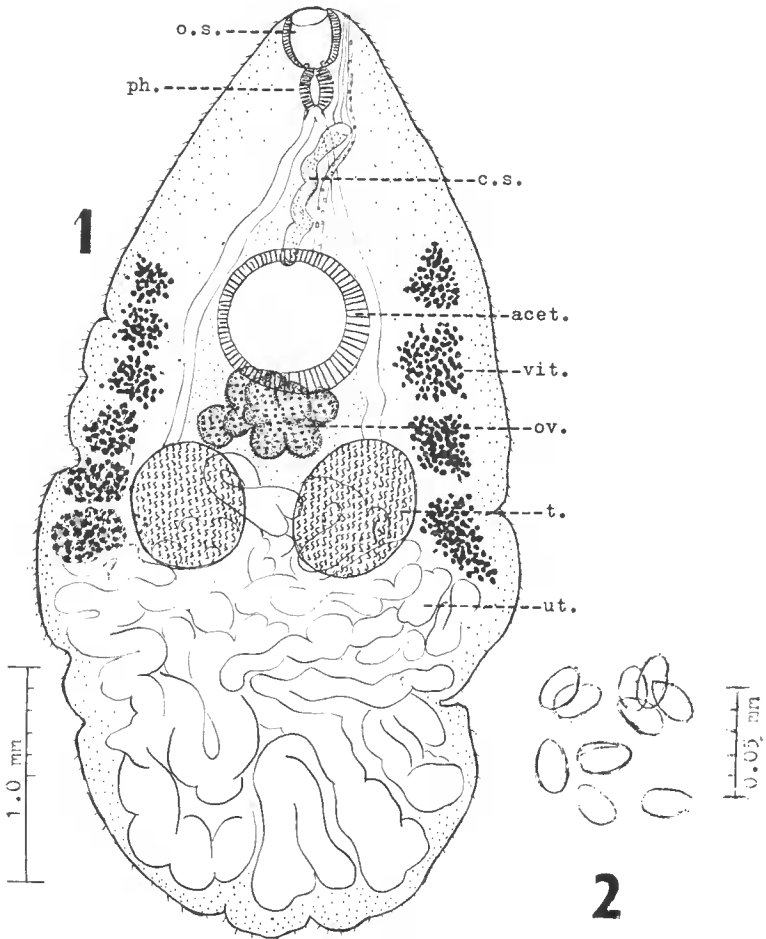


FIG. 1 et 2. — *Prosthogonimus robdollfusi*, n. sp.

the oral sucker. It lies behind the intestinal bifurcation and its outer border touches, but does not overlap, the caeca.

Mouth terminal, leading into a muscular pharynx, closely behind the oral sucker. Very short oesophagus. Intestinal bifurcation immediately behind the pharynx. Intestinal caeca narrow, slightly wavy and extending to two-thirds of the length, till behind the testes. Male genital opening anterior and to the left of the mouth.

Testes prominent, oval, almost equal, connubial, about the middle of the body. Cirrus sac somewhat narrow and twisted (sinuous) with pars prostatica and seminal vesicle extending posteriorly from behind the pharynx and overlapped by the anterior border of the acetabulum.

Ovary lobulated (7-8 lobes), median, immediately behind the acetabulum and partly overlapped by its posterior border. Uterine coils many, over-reaching caeca, mostly filling the posterior half of the body, the earlier loops overlapping the two testes, and the later ones (both descending and ascending loops) occupying the entire posterior region, and filled with numerous, very small eggs (fig. 2). The uterus anterior to the acetabulum is narrow, not folded, coiled or looped, thin-walled, and runs close to the cirrus sac and male duct, and opens anteriorly by a pore to the left of the mouth and close to the male genital pore.

Vitellaria follicular, in groups (4 on the left and 6 on the right), on the sides, extra-caecal, extending from the level of the anterior border of the acetabulum to a little behind the testes but not approaching them.

Measurements of the three specimens and their internal organs were determined to be :

	1	2	3
Body size.....	4.34 × 2.14	4.45 × 2.22	4.74 × 2.57
Oral sucker.....	0.27 × 0.20	0.29 × 0.25	0.27 × 0.24
Pharynx.....	0.15 × 0.10	0.21 × 0.20	0.18 × 0.13
Acetabulum.....	0.730	0.846	0.673
Testes : right.....	0.883 × 0.500	0.783 × 0.500	0.766 × 0.550
left.....	0.80 × 0.50	0.63 × 0.60	0.68 × 0.63
	Range of measurements		
Body size.....	4.34-4.74 × 2.14-2.57		
Oral sucker.....	0.27-0.29 × 0.20-0.25		
Pharynx.....	0.15-0.20 × 0.10-0.20		
Acetabulum.....	0.673-0.846		
Testes : right.....	0.766-0.883 × 0.500-0.550		
left.....	0.63-0.80 × 0.50-0.63		
Eggs.....	0.020-0.022 × 0.013-0.018		

(all measurements in millimetres)

In identifying the present species, the key available from JAISWAL'S work (1957) was employed. The organization described above keyed to numbers 1, 5, 6, 7, 9 and 10 leading to the species *P. macroacetabulus* Chauhan, 1940 :

1. Suckers unequal, acetabulum at least a half larger than the oral sucker ;
5. Ovary mostly or partly in the acetabular zone.
6. Ovary partly or mostly overlapping the acetabulum.
7. Uterus without heavy pre-acetabular coils.
9. Cirrus sac reaching the acetabulum ; oesophagus extremely small.
10. Vitellaria not restricted to post-acetabular region — *P. macroacetabulus*.

But, a comparison with *P. macroacetabulus* revealed important differences, as shown in Table I, warranting the separation of the present form as a distinct species. It is larger than *P. macroacetabulus*, has a pyriform shape, a notched outline (which though seen in all three specimens may have been artificially caused), a cirrus sac overlapped by the anterior border of the acetabulum, a lobulated and median ovary, and small follicular clusters (4-6) of vitellaria which do not overlap the testes. Accordingly, it could be referred to a new species, and is named *Prosthogonimus robdollfusi* as a tribute to Dr Robert Ph. DOLLFUS, of the Museum in Paris.

The earlier records in *Capella gallinago* are of *P. ovatus* and *P. sp.*, (Dollfus, 1948). The commonest habitat of *Prosthogonimus* is the bursa Fabricii, but it has occasionally been observed in the oviduct (where it interferes with egg formation and egg laying), and the cloaca. *P. macroacetabulus* Chauhan, 1940 was reported from the alimentary canal of its host presumably having migrated from the hursa or oviduct through the cloaca and rectum.

Specific description : Pyriform, notched (?) body, 4.34-4.74 × 2.14-2.57 mm ; unequal suckers, oral sucker 0.27-0.29 × 0.20-0.25 mm, acetabulum 0.673-0.846 mm ; testes oval situated about the middle of the body ; ovary lobulated and partly overlapped by acetabulum ; uterus, heavily coiled in posterior half and no coils in pre-acetabular region ; cirrus sac sinuous and overlapped by anterior border of acetabulum ; vitellaria in 4-6 small groups of follicles, extending from anterior border of acetabulum and not overlapping testes ; eggs, 0.020-0.022 × 0.013-0.018 mm.

Species : *Prosthogonimus robdollfusi* n. sp.

Host : *Gallinago gallinago*.

Habitat : Bursa Fabricii.

Locality : Madras (India).

Table I.

COMPARISON BETWEEN *Prosthogonimus macroacetabulus*
AND *P. robdollfusi* n. sp.

	<i>P. macroacetabulus</i>	<i>P. robdollfusi</i> n. sp.
Shape and size	elongately oval, anterior end blunt, outline irregular; 2.94 × 1.22 mm.	pyriform, anterior end pointed, outline notched (?); 4.34-4.74 × 2.14-2.57 mm.
Cuticle	spines more numerous at anterior end.	spines closely set at anterior end and middle region.
Oral sucker	oblong; 0.380 × 0.272 mm.	oval; 0.270-0.295 × 0.20-0.25 mm.
Acetabulum	round, 0.64 × 0.63 mm. touches the intestinal caeca.	circular, disc shaped, 0.673-0.846 mm outer border just touches intestine.
Oral sucker - acetabulum	1 : 2.34	1 : 3
Pre-pharynx	absent.	absent.
Pharynx	bulbous, muscular, 0.119 × 0.130 mm.	muscular, 0.15-0.20 × 0.10-0.20 mm.
Oesophagus	small.	very short, almost absent.
Intestine	forking 0.56 mm from anterior end. caeca sinuous and terminate beyond testes.	forking 0.5 mm from anterior end. wavy and end behind testes.
Testes	oval, slightly unequal, about the middle. left : 0.35 × 0.34 mm. right : 0.425 × 0.40 mm.	oval, slightly unequal, about the middle. left : 0.633-0.800 × 0.500-0.633 mm. right : 0.766-0.833 × 0.500-0.550 mm.
Cirrus sac	sinuous, extends posteriorly up to anterior border of acetabulum.	sinuous, overlapped posteriorly by the acetabulum.
Ovary	transversely elongate, almost median, irregularly spherical; 0.30 × 0.49 mm. greatly overlapped by acetabulum.	lobulated, median, partly overlapped by acetabulum.
Uterus	greatly coiled, heavy coils in the post-acetabular region. No pre-acetabular coils.	Heavily coiled, loops filling the entire post-acetabular region and overlapping testes. No pre-acetabular loops.
Vitellaria	large, follicular clusters, from intestinal bifurcation to beyond testes but not to caecal ends. 4 on left, 5 on right. overlap testes.	small follicular clusters, from anterior border of acetabulum to behind testes. 4 on left, 6 on right. Do not overlap testes.
Eggs	oval, with posterior spine. 0.018-0.026 × 0.005-0.012 mm.	oval, no spine seen. 0.020-0.022 × 0.013-0.018 mm.

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